REMARKS

Claims 1-14 have been rejected under 35 USC 103. The bases for this rejection have been carefully considered, however, reconsideration of the rejection in light of the following remarks is respectfully requested. Consideration of newly submitted claim 15, directed to a specific type of cog V-belt used in a scooter power transmission that conforms to a commercially adopted body of the invention, is also respectfully requested.

A general discussion of the claimed invention, the technical problem addressed by the invention and its advantages over the prior art, were previously submitted in Applicant's "Reply and Amendment A".

A. Rejection of Claims 1-7 and 9-14 under 35 USC 103(a)

The rejection of claims 1-7 and 9-14 under 35 USC 103(a) as being obvious over Ito '226, in view of Kumazaki et al '143 is respectfully traversed.

1. The *Prima Facie* Case of Obviousness

For an obviousness rejection under 35 USC 103 to be sustainable, a *prima facie* case of obviousness must be made out in the rejection. Pursuant to MPEP §2143, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art combination of references must teach or suggest all the claim limitations.

Addressing the third criteria first, to establish *prima facie* obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA 1974). In the present case, Applicant is claiming a transmission belt comprising a blend of longer polyester fibers with shorter aramid fibers. As the Examiner has acknowledged in the Office Action, Ito '226 fails to disclose that the belt body is made of both aramid fibers and polyester fibers. It is also clear from the disclosure of Kumazaki et al '143 that that reference fails to disclose use of blends of fibers, including aramid fibers blended with polyester fibers, having differential fiber lengths and in particular fails to disclose the use of polyester fibers longer than the aramid fibers forming the blend. The Examiner attempts to make up for this deficiency by interpreting paragraph [0052] in Ito '226 as disclosing the use of longer polyester fibers, than aramid

fibers. It is submitted that that is not a reasonable interpretation of the disclosure in Ito '226. A fair interpretation is that a single fiber, rather than a blend of fibers, is employed, and that the preferred fiber is an aramid fiber having a length in the range of 1 to 10 mm, preferably from 3 to 5 mm. The reference goes on to state that when using [the less preferred] polyamide fibers, polyester fibers or cotton fibers, one preferably selects a fiber length of from 5 to 10 mm. Thus, the reference generally suggests use of a single fiber in the 1 to 10 mm range, however, aramid fibers are preferred and if they are used, the length is preferably from 3 to 5 mm, but if you select one of the lesser preferred alternative fibers, including polyester fibers, fiber length is preferably from 5 to 10 mm. This passage does not disclose or suggest the use of a blend of aramid and polyester fibers using relatively longer polyester fibers with relatively shorter aramid fibers.

Thus, to make out a *prima facie* case, the Examiner must modify the teaching of these references, the first criteria set forth in MPEP §2143. However, the Examiner has not come forth with any objective evidence suggesting why the teachings of Ito '226 and Kumazaki et al '143 should be modified to meet the claim limitations. It is submitted that the Examiner can explain such modification only through hindsight reconstruction of Applicant's claim from the prior art. It is improper to use the inventor's patent specification as an instruction book on how to reconstruct the prior art. *Panduit v. Dennison Mfg. Co.*, 1 USPQ 2d 1593 (Fed. Cir. 1987).

Nevertheless, a *prima facie* case can still be made out if the third criteria is met, namely that the knowledge generally available to one of ordinary skill in the art would lead to modification of the applied references. The Examiner has not submitted any evidence to support this criteria.

Even though Applicant strongly submits, in light of the foregoing, that a *prima facie* case of obviousness has not been made out, even if *arguendo* we assume that the *prima facie* case has been made, there still must be some teaching in the art or the applied references to motivate making the combination. In accordance with MPEP §2143.01, motivation, in turn, can come from one of three possible sources: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 47 USPQ 2d, 1453, 1457-58 (Fed. Cir. 1998).

We have seen nothing in the applied references Ito '226 and Kumazaki et al '143, nor in the prior art generally, to motivate one skilled in the art to make the combination suggested by the Examiner. This leaves the third possible source for motivation to combine the references, namely the nature of the problem to be solved. When this source

is examined, it is submitted that each of the subject invention, Ito '226 and Kumazaki et al '143, while pertaining to power transmission belts, all address distinct and separate problems.

The problem addressed by Ito '226 is crack generation particularly at the cog trough region, or in the cog crest, where such cracks can initiate and propagate, and result in flex fatigue failure or breakage of the belt (see paragraphs [007] – [0011]). Kumazaki et al '143 is concerned with abatement of noise in a V-ribbed belt (see col. 1, lines 5-11; line 65-67; col. 2, lines 1-22; lines 28-31; col. 5, lines 1-9; col. 6, lines 50-54; and elsewhere). Thus, neither of the references applied in the combination rejection under 35 USC §103, Ito '226 and Kumazaki et al '143, address even a remotely similar problem confronting power transmission belts. This can be likely explained as the belts disclosed and which serve as the focus in the two references are of two distinct types – one is a traditional cog V-belt and the other is a V-ribbed belt. V-belts and V-ribbed belts are of a totally distinct construction, function differently and possess distinct modes of operation.

Perhaps of even greater important, the problem addressed by the claimed invention, that is durability of a side drive V-belt, such as used in a scooter drive application, concerns tensile strength, modulus and compression stress resistance, among other parameters, not considered as problems in the applied references. In this respect the Examiner has suggested from the passage at the top of col. 5, lines 1-9, of Kumazaki et al '143, that that reference is directed to the problem of belt durability. With all due respect, it is submitted that that passage is primarily concerned with noise reduction to satisfactory levels, without significantly adversely affecting durability of the belt. That is, the reference is not addressing improvement of durability, only noise abatement without significantly adversely affecting durability.

The problem confronted by an inventor must be considered in determining whether it would have been obvious to combine references in order to solve that problem. *In re Northern Telecom Inc. v. Datapoint Corp.*, 15 USPQ 2d 1321 (Fed. Cir. 1990). When neither of the applied references confront Applicant's problem of V-belt durability, why would one skilled in the art turn to the applied references to solve the durability problem?

2. Rebuttal of the *Prima Facie* Case

Even assuming that the Examiner has met his burden of presenting a *prima facie* case of obviousness of Applicant's claims in light of Ito '226 together with Kumazaki et al '143, the unexpected and superior results demonstrated by Applicant's claimed invention

rebut any such *prima facie* case of obviousness. The Examiner's attention is first directed to the comparative tensile strength test disclosed in the Examples section of the application starting at page 9, line 15 through page 15, line 15. Each of the examples of the invention and comparative examples (refer to Table 1 on page 10) utilize the same stock rubber (EPDM) but vary the relative lengths of intermixed aramid and polyester fibers. The Examples A-H of the invention utilize longer polyester fibers compared to shorter aramid fibers whereas the comparative Examples 1 and 2 each use aramid and polyester fibers of the same length. As Applicant has argued, why would someone skilled in the art be motivated, or presented with a suggestion, to combine relatively longer polyester fibers with relatively shorter aramid fibers to solve a problem relating to durability of a molded power transmission V-belt? It is submitted that there is none. And where would the prior art provide a reasonable expectation of success, or improved results from making such a combination as claimed by Applicant? It is submitted that there is none.

It is well settled that a *prima facie* case of obviousness is rebutted generally by showing that the claimed invention achieves unexpected results relative to the prior art. *In re Woodruff*, 15 USPQ 2d 1934 (Fed. Cir. 1990). The comparative tensile strength tests shown graphically in Figs. 3 and 4 demonstrate unexpected improvement in tensile strength when the claimed blend of longer polyester fibers is combined with shorter aramid fibers. In Fig. 3, for example, Examples A, C, and E of the invention, using 1 mm long aramid fibers with 3 mm long polyester fibers, demonstrate significantly improved tensile strength (leading to increased durability) over the comparative Examples 1 and 2 which employed the same length aramid and polyester fibers, of either 1 mm length or 3 mm length.

The advantages of the invention are even more dramatic when comparing Examples F and H of the invention with Comparative Examples 1 and 2, illustrated in Fig. 4. As stated in the specification on pages 14 and 15, the elongation ratios of the samples of the invention were less than those of the Comparative Examples 1 and 2, thus the strengths against applied tension were greatly superior to the Comparative Examples. In Fig. 4, Examples F and H used, respectively, aramid fibers of 2 mm in length and polyester fibers of 3 mm length, and aramid fibers of 3 mm in length and polyester fibers of 5 mm in length. The remaining comparative tests compare compression stress (Fig. 5), friction coefficient (Fig. 6), life in hours of the belts (Figs. 9 and 12) and hardness and tension (Figs. 10 and 11) in which the belt of the invention is compared to a conventional scooter belt. These later comparisons show dramatic improvements between the claimed scooter

belts of the invention and standard polychloroprene aramid fiber-loaded scooter belts that were the recent commercial standard. This dramatic improvement in tensile strength and other durability factors for belts is neither disclosed nor suggested in the applied references, or elsewhere in the prior art. There is certainly no reasonable expectation of success, that is, realizing such improvements in durability, that can be gleaned from either of the applied Ito '226 and Kumazaki et al '143 references, taken singly or in combination.

Thus, even if the Examiner has made out a *prima facie* case under 35 USC 103, which Applicant does not believe he has done, nevertheless the case has been rebutted by achievement of advantageous, unexpected results, demonstrating the criticality of the claimed blend of longer polyester with shorter aramid fibers in the rubber stock of the claimed power transmission belt.

B. Rejection of Claim 8 under 35 USC 103(a)

The rejection of claim 8 under 35 USC 103(a) as being unpatentable over Ito '226 in view of Kumazaki et al '143 and further in view of Kodama '520, is respectfully traversed.

All of the arguments made above regarding the *prima* facie case of obviousness, and rebuttal of the *prima facie* case apply to this rejection as well, and are incorporated herein. It is submitted that there is nothing in Kodama '520 that makes up for the basic deficiency in the rejection of claim 1, to which claim 8 is dependent.

C. Newly Submitted Claim

Claim 15 is dependent upon claim 14 and is directed to the commercially adopted scooter belt, which is discussed in the Example section of the specification from middle of page 15 through page 19, and demonstrates significant improved results over the conventional fiber loaded scooter belt.

For instance, claim 15 is directed to a single strand cogged V-belt, in sharp contrast to the multi-v-ribbed belt disclosed in Kumazaki et al '143. The claim also incorporates the limitations of claim 14, calling for a blend of aramid fibers of less than 3 mm length with polyester fibers of less than 5 mm length oriented transversely to the running direction of the belt. While the principal reference Ito '226 discloses fiber lengths generally from 1 to 10 mm, that reference does not suggest or prefer use of aramid fibers of less than 3 mm (rather 3 to 5 mm) and polyester fibers of less than 5 mm (rather 5 to 10 mm) in length. Moreover, claim 15 claims use of EPDM as the rubber stock, intermixed with an organic metal salt (coagent). While it is conceded that various of

the references suggest the possible use of EPDM[1], when that limitation is taken into account in conjunction with all the other limitations of claim 15, and the unexpected results set forth in the specification and illustrated in Figs. 5-12 are factored in as well, it is seen that Applicant has made a major step forward in scooter belts compared to the conventional belts which is unexpected, not suggested by the prior art, and therefore nonobvious under 35 USC 103.

[1] But without use of the organic metal salt coagent (see generally, assignee's U.S. pat. no. 5,610,217)

FEE STATEMENT

Any fees which may be required as a result of the amendments made herein, together with the Petition for Extension of Time, are authorized to be charged to Assignee's deposit account number 07-0475.

Favorable reconsideration of this application is respectfully solicited.

Respectfully submitted,

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Denver, Colorado
Dated: 22 February 2007